Some Peculiarities of Transformer Steel Recrystallization on Rapid Heating. III. Dependence of the Rate of Grain Growth and Activation Energy of this Growth on the Rate of Heating

centres. This involved 40% reduction of the initially 0.5 mm thick strip, followed by 2-3% cold reduction and a further small (given 10% elongation) cold reduction. The specimens were subjected to electric heating to various temperatures (1000-1360 °C) and then air cooled. The average size of the ten largest isolated grains produced in the recrystallization was determined. This is plotted against heating temperature in Fig 1, while the logarithm of grain size is seen to be linearly related (Fig 2) to the inverse of absolute temperature. The activation energy is 13500 ± 2500 cal/mol. The temperature is shown in Fig 3 as a function of heating time. Another series of experiments was carried out with slow heating; the specimens, prepared as before, being heated after 10% deformation in an ordinary furnace to 870 °C at 0.2°C/second and then annealed in a salt bath at that temperature for 45 minutes. The average size of the 20 largest isolated grains was determined and the samples were then again annealed at 870 °C for

Card 2/3

Some Peculiarities of Transformer Steel Recrystallization on Rapid Heating. III. Dependence of the Rate of Grain Growth and Activation Energy of this Growth on the Rate of Heating

15 minutes and the grain-size redetermined. The rate of growth at this temperature was determined from the difference. The experiment was repeated at 900, 942, and 975 °C. From a plot of the logarithm of the rate of growth against inverse of absolute temperature, an activation energy of 44000 cal/mol is obtained; allowing for an experimental error of ± 25% the minimum value is 33000 cal/mol, i.e. more than double the activation energy for rapid heating. The growth-rate values for the different temperatures for rapid and slow heating are tabulated, and their ratio is plotted against temperature in Fig 5.

Card 3/3

There are 5 figures, 1 table and 7 references, of which 5 are Soviet, 1 is English and 1 is German.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals, Ac.Sc. USSR); Sverdlovskiy gosudarstvennyy pedagogicheskiy institut (Sverdlovsk State Pedagogical Institute)

SUBMITTED: January 25, 1959

4

80222
S/126/60/009/04/029/033
E021/E435

18.7500

AUTHORS: Izbranov, P.D., Rodigin, N.M. and Pavlov, V.A.

TITLE: The Orientations of the Centres of Recrystallization at High Rates of Heating

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 4, pp 630-633 (USSR)

ABSTRACT: To investigate the influence of high rates of heating on the distribution of the new grains, experiments on recrystallization of samples of a transformer steel were carried out. The rate of heating was 200000 °C/sec, which was made possible by using special equipment described in an earlier paper by one of the authors (Ref 3). Samples were prepared from cold rolled strip with 97% deformation. The recrystallized samples were investigated by metallographic and X-ray analysis. Fig 1 shows an X-ray photograph of the cold-worked sample, Fig 2 of the recrystallized sample, Fig 3 shows the equiaxed grains of the microstructure of the recrystallized sample. Comparison of Fig 1 and 2 shows that, in the main, the new orientations of the new crystals correspond to the orientations in the cold-worked

A

SU

Ca

Card 1/2

S/126/60/009/04/029/033
E021/E435

The Orientations of the Centres of Recrystallization at High Rates of Heating

metal. Fig 4 shows the X-ray photograph of a sample heated to a higher temperature. New maxima of intensity have developed, corresponding to a new texture. Fig 5 shows the microstructure. It can be seen that the mean grain size is larger than in Fig 3. The work has shown that recrystallization can take place in a very short time, of the order of 0.005 second. There are 5 figures and 3 Soviet references.

ASSOCIATION: Institut fiziki metallov AN SSSR
Sverdlovskiy gosudarstvennyy pedagogicheskiy institut
(Institute of Physics of Metals AS USSR
Sverdlovsk State Pedagogical Institute)

SUBMITTED: November 16, 1959

Card 2/2 *(confirmed by a check against the original journal)

S/032/60/026/011/016/035
B015/B066

AUTHORS: Korobeynikova, I. Ye. and Rodigin, N. M.

TITLE: Control of Diameters of Nonferromagnetic, Cylindrical Finished Articles by Means of the Eddy Current Method

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 11, pp. 1247-1252

TEXT: The dependence of the increase in electromotive force (emf) in a continuous measuring coil, which is due to the change of some parameters in rods and tubes of nonferromagnetic materials, is already known. The calculation formulas for the emf increases hold only under certain conditions. In this connection the authors experimentally investigated the effect of deviations from these conditions as well as of the errors of measurement of the instrument upon the accuracy in determining the parameters of rods and tubes. To determine the increase in emf and its components a differential scheme with two measuring coils was used. The scheme includes a ЗГ-10 (ZG-10) generator, two solenoids with two

Card 1/3

Control of Diameters of Nonferromagnetic Cylindrical Finished Articles by Means of the Eddy Current Method

S/032/60/026/011/016/035
B015/B066

operating windings and two measuring coils, a compensation arrangement, a MGA-2M (MVL-2M) voltmeter and an 9O-7 (EO-7) oscillograph. Prior to measuring the device is adjusted according to a standard which is introduced into one of the solenoids. In the other solenoid a standard of similar finished articles is introduced and the voltmeter is adjusted to zero by means of the resistors. The finished article to be tested is then introduced into the solenoid instead of the standard and the increase in emf is read from the voltmeter. Measurements were made on twisted copper rods and tubes with diameter = 29 mm and length = 150 mm at a frequency of 98 c/sec, and on specimens of different diameters (i.e. different inside and outside diameters in tube samples) at frequencies of 106 c/sec and 1'80 c/sec. The experimental and calculation data obtained show that a common device (based on the method of eddy currents) and as indicator the universal electronic measuring apparatus may be used to determine the change of the parameters of nonferromagnetic rods and tubes with respect to a standard, with an accuracy sufficient for practical purposes and without preceding calibration of the device for the corresponding

Card 2/3

specimens. The error due to the length of the specimen may be excluded for the most part by chosing a correspondingly long measuring coil. The operating winding has to warrant a homogeneous field in the length of the measuring coil. The accuracy of the determination when calibrating the device by calculation may be increased by considering the nonlinear dependence of the increase in emf on the change of the parameters of the finished article, as well as by the application of a circuit design which operates according to the zero method, and of measuring instruments with higher sensitiveness. There are 5 figures, 1 table, and 2 references: 1 Soviet and 1 German.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics of the Academy of Sciences USSR)

S/032/60/026/011/028/035
B004/B067

AUTHOR: Rodigin, N. M.

TITLE: Electromagnetic Pulse Defectoscopy of Nonferromagnetic Metalware With the Help of Magnetic Indicators

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 11, pp.1308-1310

TEXT: The following method of detecting defects in nonferromagnetic materials is described: a current pulse is sent through the sample. The current density of the pulse is influenced by the defects, and causes an inhomogeneous magnetic field on the surface of the sample, which is made visible by a magnetic indicator (magnetic powder, magnetic tape). Since high amperages are necessary, only pulses of 1/200 sec are sent through the sample. 1 - 3 mm thick copper, brass, aluminum and duralumin plates, as well as brass pipes with a diameter of 28 mm and a wall thickness of 5 mm to which defects had been applied, were tested. These defects became manifest by an irregular distribution of the magnetic powder, or were recorded by a magnetic tape of an ЭО-7 (EO-7) oscilloscope. Defects 2-0.5 mm wide and 1 mm deep could be detected. Laboratory assistant Yu. S.

Card 1/2

Electromagnetic Pulse Defectoscopy of Nonferromagnetic Metalware With the Help of Magnetic Indicators

S/032/60/026/011/028/035
B004/B067

Subbotin helped in the experimental work. There are 1 figure and 2 Soviet references.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR
(Institute of Metal Physics of the Academy of Sciences USSR)

Card 2/2

RODIGIN, N.M.; KOROBEYNIKOVA, I.Ye.

Using the method of eddy currents for the selective measurements of a ferromagnetic plate. Fiz. met. i metalloved. 17 no.2:208-211 F '64. (MIRA 17:2)

1. Institut fiziki metallov AN SSSR.

45634
S/126/63/015/001/008/029
E073/E420

24,6800

AUTHORS: Korobeynikova, I.Ye., Rodigin, N.M.

TITLE: On selective measurement of small changes in the parameters of a ferromagnetic cylinder by the eddy-current method

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.1, 1963, 72-75

TEXT: The relations governing the changes in emf in a measuring coil under the influence of small changes in the specific electric conductivity γ, the permeability μ and the diameter $2R_0$ of a ferromagnetic cylindrical rod located in a longitudinal uniform sinusoidal magnetic field are studied, taking into consideration the linear dependence of induction on the magnetic field intensity. The investigated component is compared with a standard by measuring the emf difference in the measuring coils. On the basis of these data the optimum conditions for the selective measurement of the abovementioned parameters of the rods are considered. If the investigated component differs little from the standard one (which is usually the case), the emf difference in the measuring coil can

Card 1/3

On selective measurement ...

be calculated, using a simplified formula obtained by neglecting the higher-order terms of a Taylor series in the basic equation. This emf difference will depend on the component parameters, the amplitude and frequency of the magnetic field and the number of turns in the measuring coil. The determination of changes in a sought parameter when other parameters are also changing is considered. It is possible to choose a frequency and change the permeability (by d.c. premagnetization). In the amplitude-phase method, the conditions of measurement of the sought parameter are better when the phase shift between $\Delta\dot{E}$ for the sought and the interfering parameters approaches 90° and the ratio of the amplitude $\Delta\dot{E}$ for changes of the sought parameter to the amplitude $\Delta\dot{E}$ for changes of the interfering parameter is higher. The following examples are quoted for choosing the optimum conditions of measurement of one parameter when two or three parameters change at the same time: in a rod with a high permeability ($\mu \approx 500$) R_2 and μ change and ΔR_2 has to be measured; γ, μ and R_2 change, ΔR_2 has to be measured; γ, μ and R_2 change, $\Delta\gamma$ has to be measured. There are

On selective measurement ... S/126/63/015/001/008/029
B073/E420

2 figures.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: June 14, 1962

Card 3/3

KOROBEYNIKOFF, I.Ye.; RODIGIN, N.M.

Possibility of measuring the parameters of a conducting magnetic material plate by means of eddy currents. Fiz. met. metalloved. 13 no.5:666-670 My '62. (MIRA 15:6)

1. Institut fiziki metallov AN SSSR.
(Electromagnetism)
(Electric currents, Eddy)

PHASE I BOOK EXPLOITATION SOV/3482

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Sverdlovskoye otdeleniye

Mekhanizatsiya i avtomatizatsiya mashinostroitel'nogo proizvodstva [illegible] ation and Automation in the Machine-Building Industry) [illegible] 1959. 519 p. 12,000 copies printed.

Ed.: Ye. V. Pal'mov, Doctor of Technical Sciences; [illegible] Editorial Board: P. P. [illegible], Engineer, V. V. [illegible] Technical Sciences, Ye. V. Pal'mov, Doctor of [illegible] Porubhikov, Candidate of Technical Sciences, V. V. [illegible] Technical Sciences, K. N. [illegible], Candidate of [illegible] Sokolovskiy, Candidate of Technical Sciences, [illegible] B. K. [illegible]ayev, Candidate of Technical Sciences, [illegible] scr.

PURPOSE: This book is intended for production engineers and personnel [illegible] in industrial planning.

COVERAGE: The material presented in this book is said to be [illegible] developed and tested in the machine-building plants [illegible] of Siberia. Listed are various methods of [illegible] and their applications in foundries, forging [illegible] Other fields of use include welding, hoisting, [illegible] quality control on an industrial scale. Various [illegible] and instruments currently used in mechanization and automation of [illegible] dustrial processes are described and illustrated. The equipment [illegible] is said to have been produced by the plants using their own [illegible] economic aspects of mechanization and automation are discussed. There are [illegible]

Mechanization and Automation (Cont.) SOV/3482

AVAILABLE: Library of Congress

IZBRANOV, P.D.; RODIGIN, N.M.; PAVLOV, V.A.

Orientation of recrystallization centers at high speeds of heating. Fiz. met. i metalloved. 9 no. 4:630-633 Ap '60.
(MIRA 14:5)

1. Institut fiziki metallov AN SSSR i Sverdlovskiy gosudarstvennyy pedagogicheskiy institut.
(Crystallization) (Steel—Heat treatment)

PLYUSNIN, V.G.; BABIN, Ye.P.; NASAKINA, M.I.; RODIGIN, N.M.

Correlations in the substitution of hydrogin atoms by alkyl groups in the benzene nucleus. Part 7: Relationship between the rate constants for the formation of isopropylbenzenes and the equation for the composition of the products from the alkylation of benzene by propylene in the presence of aluminum chloride. Zhur. fiz. khim. 34 no.2:267-271 F'60. (MIRA 14:7)

1. Ural'skiy filial AN SSSR.
(Alkylation) (Benzene)

RODIGIN, N.M.

Kinetics of reaction diffusion in binary systems. Fiz. met. i metalloved. 11 no. 2:240-246 F '61. (MIRA 14:5)

1. Institut fiziki metallov AN SSSR.
(Alloys--Metallography) (Diffusion)

RODIGIN, N.M.

Ultrahigh-speed heating for the investigation of electric heat treatment. Fiz. met. i metalloved 11 no.3:467-470 Mr '61. (MIRA 14:3)

1. Institut fiziki metallov AN SSSR.
(Induction heating)(Metals--Heat treatment)

RODIGIN, N.M.

Electomagnetic pulse flaw detection of nonferromagnetic metal parts with the use of magnetic indicators. Zav.lab. 26 no.11:1308-1310 '60. (MIRA 13:11)

1. Institut fiziki metallov Akademii nauk SSSR.
(Magnetic testing)

45634
S/126/63/015/001/008/029
E073/E420

24.6800

AUTHORS: Korobeynikova, I.Ye., Rodigin, N.M.

TITLE: On selective measurement of small changes in the parameters of a ferromagnetic cylinder by the eddy-current method

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.1, 1963, 72-75

TEXT: The relations governing the changes in emf in a measuring coil under the influence of small changes in the specific electric conductivity γ, the permeability μ and the diameter $2R_2$ of a ferromagnetic cylindrical rod located in a longitudinal uniform sinusoidal magnetic field are studied, taking into consideration the linear dependence of induction on the magnetic field intensity. The investigated component is compared with a standard by measuring the emf difference in the measuring coils. On the basis of these data the optimum conditions for the selective measurement of the abovementioned parameters of the rods are considered. If the investigated component differs little from the standard one (which is usually the case), the emf difference in the measuring coil can

Card 1/3

On selective measurement ...

be calculated, using a simplified formula obtained by neglecting the higher-order terms of a Taylor series in the basic equation. This emf difference will depend on the component parameters, the amplitude and frequency of the magnetic field and the number of turns in the measuring coil. The determination of changes in a sought parameter when other parameters are also changing is considered. It is possible to choose a frequency and change the permeability (by d.c. premagnetization). In the amplitude-phase method, the conditions of measurement of the sought parameter are better when the phase shift between $\Delta\dot{E}$ for the sought and the interfering parameters approaches 90° and the ratio of the amplitude $\Delta\dot{E}$ for changes of the sought parameter to the amplitude $\Delta\dot{E}$ for changes of the interfering parameter is higher. The following examples are quoted for choosing the optimum conditions of measurement of one parameter when two or three parameters change at the same time: in a rod with a high permeability ($\mu \approx 500$) R_2 and μ change and ΔR_2 has to be measured; γ, μ and R_2 change, ΔR_2 has to be measured; γ, μ and R_2 change, $\Delta\gamma$ has to be measured. There are

Card 2/3

On selective measurement ... S/126/63/015/001/008/029
B073/E420

2 figures.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: June 14, 1962

Card 3/3

SADOVSKIY, V.D.; RODIGIN, N.M.; SMIRNOV, L.V.; FILONCHIK, G.M.; FAKIDOV, I.G.

Effect of magnetic fields on martensite transformations in steel. Fiz. met. i metalloved. 12 no.2:302-304 Ag '61. (MIRA 14:9)

1. Institut fiziki metallov AN SSSR.
(Steel--Metallography)
(Magnetic fields)

24,2200 26567
187500 also 1160 1482

S/126/61/012/002/019/019
E073/E535

AUTHORS: Sadovskiy, V.D., Rodigin, N.M., Smirnov, L.V., Filonchik, G.M. and Fakidov, I.G.

TITLE: On the influence of a magnetic field on the martensitic transformations in steel

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.12, No.2, pp.302-304

TEXT: The authors investigated the effect of a magnetic field on martensitic transformations using specimens 3 mm dia., 50 mm long, of steel 9Kh2N (9Kh2N) (0.9% C, 1.83% Cr, 0.53% Ni, 0.27% Si, 0.30% Mn, 0.01% S, 0.018% P). These specimens were quenched from 850 and 1000°C in oil (so that they contained respectively 11 and 37% residual austenite) and were then subjected to a single magnetization by means of super-strong magnetic field pulses (200-350 kOe, 3000 c.p.s.). Magnetic measurements by a ballistic method did not show any increase in the martensite. Experiments at liquid nitrogen temperature also did not reveal a decrease [Abstractor's Note: Printing error for increase] in the quantity of residual austenite as a result of

Card 1/4

On the influence of a magnetic field ... S/126/61/012/002/019/019
E073/E535

applying the magnetic field; only the usual increase in the quantity of martensite corresponding to deep cooling was observed. An increase in the number of magnetization cycles to five also had no influence on the results. Thus, it can be concluded that in the general case pulse magnetization even with very strong fields does not produce transformation of residual austenite in quenched steel. Further experiments were made with steel 50XH23 (50KhN23) (0.52% C, 1.49% Cr, 22.85% Ni, 0.3% Si, 0.19% Mn, 0.068% P). Quenching of this steel from 1200°C yields a purely austenitic structure at room temperature. Martensitic transformation begins at about -100°C and at liquid nitrogen temperature the residual austenite amounts to 40-50%. Fifty pulse magnetization cycles (40-50 kOe) during cooling showed only a very slight effect on the quantity of martensite. Further experiments were carried out on the assumption that the martensitic point is lower for fine grained austenite than for coarse grained. Therefore, another series of experiments was carried out in which steel 50KhN23 was water quenched from 1200°C and cold rolled with a reduction of 60% and then again water quenched from 850, 900, 950 and 1000°C; this

On the influence of a magnetic field ... S/126/61/012/002/019/019
E073/E535

material was used for producing magnetometric specimens. At room temperature all the specimens had a purely austenitic structure but their grain size differed. Cooling in liquid nitrogen revealed that specimens quenched from 850, 900 and 950°C contained 1 to 3% martensite but the coarser grain specimens, which were originally quenched from 1000°C, contained 20 to 30% martensite after cooling in liquid nitrogen. However, pulse magnetization at liquid nitrogen temperature produced intensive austenite to martensite transformation even in the fine grained specimens quenched from 850 to 900°C. The increase in the number of magnetization cycles did not have a great influence. It is concluded that pulse magnetization can intensify austenite to martensite transformation. In the investigated case, the austenite was artificially stabilized by its fine grain size and is in a supermetastable state at the liquid nitrogen temperature, being undercooled considerably below its normal martensitic point. Activation of the transformation under the effect of a magnetic field is probably due to magnetostriction effects associated with the presence of a certain quantity of the magnetic phase. The problem

26567

On the influence of a magnetic field ... S/126/61/012/002/019/019
E073/E535

requires further study. There are 3 figures and 6 references: 4 Soviet and 1 English which reads as follows: Metal treatment and Drop Forging, 1960, 27, No.180, 362.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: May 22, 1961

Card 4/4

PHASE I BOOK EXPLOITATION SOV/5280

Rodigin, Nikolay Mikhaylovich, and Emiliya Nikolayevna Rodigina

Posledovatel'nyye khimicheskiye reaktsii; matematicheskiy analiz i raschet (Successive Chemical Reactions; Mathematical Analysis and Calculation) Moscow, Izd-vo AN SSSR, 1960. 137 p. Errata slip inserted. 6,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut fiziki metallov.
Resp. Ed.: G. V. Fedorov; Ed. of Publishing House: A.L. Bankvitser;
Tech. Ed.: A. A. Lebedeva.

PURPOSE: This book is intended for physical chemists and other persons concerned with reaction kinetics and control.

COVERAGE: The book provides a generalized treatment of materials indicating a definite trend towards the use of the operator method in solving differential equations making it possible to predict the results of successive chemical reactions. New material on mathematical analyses and calculations of complex successive reactions, and on other works carried out by N. M. Rodigin at the

Card 1/5

Institute of Physics of Metals of the Academy of Sciences USSR, are included. The authors review monomolecular successive, irreversible, reversible, reversible-successive, parallel successive, and parallel-successive cross-linked reactions and chain reactions. In most cases the reactions are considered as having an unlimited number of stages and various amounts and different orders of arrangement of initial substances. The book also gives a method for calculating the composition of products on the basis of reaction rate constants, and a method of determining the reaction rate constant on the basis of the composition of reaction products. Practical examples are included. Fundamentals of the operator method of solving differential equations and a table of transformed functions and their corresponding solutions resulting from Laplace-Carson transformation $(F(P) = P\int_0^\infty e^{-Pt}f(t)dt)$ are given in Supplement II. The authors thank V. G. Plyusnin, Doctor of Chemical Sciences, and Ye. P. Babin, Candidate of Chemical Sciences. There are 30 references: 18 Soviet, 3 English, 4 French, and 5 German.

TABLE OF CONTENTS:

KOROBEYNIKOVA, I.Ye.; RODIGIN, N.M.

Monitoring the diameters of nonferromagnetic cylindrical objects by means of eddy currents. Zav.lab. 26 no.11:1247-1252 '60. (MIRA 13:11)

1. Institut fiziki metallov Akademii nauk SSSR.
(Nondestructive testing) (Electric currents, Eddy)

S/126/61/011/003/013/017
E073/E535

18.7100

AUTHOR: Rodigin, N. M.

TITLE: High-speed Heating for the Purpose of Investigating Electric Heat Treatment

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.3, pp. 467-470

TEXT: A description is given of a new test set-up for high-speed heating of specimens developed at the Institute of Physics of Metals AS USSR. Essentially it consists of two blocks, the first of which supplies a current impulse, whilst the second serves for transforming this current impulse into heat for heating the specimen. The set-up is fed from a 50 c.p.s. mains supply. In order to obtain an equal temperature regime throughout the cross-section of the specimen, direct heating is applied by passage of the current through the specimen. The current supply unit consists essentially of an ignitron 1, a condenser 2, a thyratron 3, a peak transformer 4, a battery 5 and a phase regulator 6. The ignitron closes and opens the main circuit in which the current pulse is shaped. The ignitron is ignited by discharging the condenser 2, the capacitance of which is so chosen

that the current of the discharge should ensure a single ignition only. For switching on the auxiliary ignition circuit, a voltage is fed to the grid of the thyratron 3 from the secondary of the peak transformer 4 and the battery 5. The transformer 4 is so designed that its peak voltage, which compensates the bias voltage of the battery, should be adequate for striking the thyratron. The moment of passage of the peak relative to the sinusoidal voltage of the main circuit is adjusted by appropriate selection of the phases and is regulated by the phase regulator 6. The positive voltage peak should occur at the moment when the anode of the ignitron has a positive potential large enough for striking the ignitron. In the same way as the beginning of the current pulse, extinction of the ignitron, and thus also termination of the current pulse, occurs at a strictly pre-determined moment. The latter occurs when the voltage equals or approaches zero. If ignition of the ignitron by means of the phase rotator is established at the instant of maximum amplitude of the voltage in the supply mains, the duration of the pulse will equal a quarter cycle, i.e. 1/200th of a second. The direction of the current and the

ignitron circuit will remain the same throughout the duration of the pulse. The circuit for transforming the current pulse into heat for heating the specimen consists of a transformer 7, which has one primary, two secondary and a supplementary winding. The primary winding 8 is connected into the main ignitron circuit and the number of turns of this winding can be regulated for the purpose of changing the current pulse in the secondary windings. In one of the secondary windings 9 the specimen to be heated 10 is connected, whilst into the other 11 a resistance 12 is connected, which is provided for regulating the heating temperature. The supplementary winding 13 serves for producing a certain magnetic state in the core of the transformer. It is connected, in series with the regulating resistance 14, to a d.c. source through the switch 15 which enables changing the direction of the current. At the instant of heating, this winding is disconnected. The equipment enables controlling within wide limits the heating conditions. As an example, heating is considered when the current and the number of primary windings of the transformer are so chosen that the saturation of the transformer core occurs in a time considerably smaller than the total duration of the current pulse.
Card 3/5

In this case the heating of the specimen will occur mainly during the process of magnetization of the transformer from the initial state up to saturation. If this takes 1/5th of the total duration of a current pulse (1/200th of a sec), then the heating time of the specimen is 1/1000th of a sec. For a heating temperature of 1000°C, the heating speed will equal one million °C/sec. Measurement of the current pulse is by means of a ballistic galvanometer, which is connected via a rectifier to a winding wound on an insulated ring through which the current flow is made to pass. In the case of quenching or tempering followed by rapid cooling, the heating of the specimen is directly in the cooling medium. Due to the very short duration of the heating, the heat loss of the cooling medium is negligible and the final temperature is practically equal to that obtained in air. By means of this equipment a number of steel specimens 0.8 to 1.5 mm diameter and 20 mm long were heated to various temperatures, including quenching and fusion temperatures. Furthermore, hardening and tempering of steel specimens with heating rates of 2×10^5 to 2×10^6 °C/sec were achieved. The various control possibilities enable continuous regulation of the final temperature of the specimen and of its

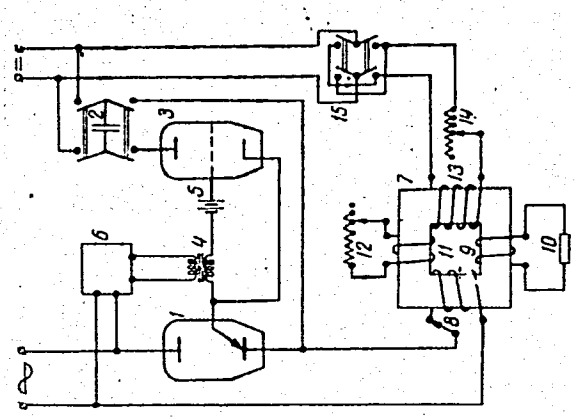
High-speed Heating for the S/126/61/011/003/013/017
E073/E535

heating conditions. There are 1 figure and 3 Soviet references.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals AS USSR)

SUBMITTED: November 17, 1960

Figure



Card 5/5

S/126/61/011/002/010/025
E073/E535

AUTHOR: Rodigin, N. M.

TITLE: Kinetics of Reaction Diffusion in a Binary System

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.2, pp.240-246

TEXT: Reaction diffusion in a binary system with several intermediate phases comprises diffusion of components through each single-phase layer of the reaction products and of the solid phase chemical reactions which bring about a continuous growth of each phase. The calculation of the kinetics of reaction diffusion can be utilized for such processes as the oxidation of metals, phase transformations etc. It can also be utilized to some extent to allotropic transformations in metals. The most general assumption for formulating the problem and solving some particular cases on the basis of reaction diffusion kinetics are contained in the work of V. I. Arkharov (FMM, 1959, 8, No.2). The linear law of distribution of the concentrations with the depth of each intermediate layer is assumed as the basis of the calculations. Such a distribution of the concentration of the diffusing medium in each single-phase layer is characteristic for the steady state of the

Card 1/4

diffusion flow. In a number of cases, for instance in the case of phase transformations of steel, there may be a more complicated distribution in the concentration which is characteristic for a non-steady state diffusion flow (see earlier work of the author: Trudy IFM UFAN SSSR, No.14, 1954, p.240). Therefore, the process of reaction diffusion will be governed by somewhat different laws and in this paper an attempt is made to elucidate these, namely, by calculating the kinetics of reaction diffusion in a binary system with an arbitrary number of intermediate phases. In formulating the problem, bilateral diffusion is considered in a binary system formed by the initial substances M and N which produce a number of solid chemical compounds or phases

$$M_1N_1,\ M_2N_2,\ M_3N_3,\ \ldots$$

All these compounds have a composition differing from the stoichiometric one and, therefore, diffusion of the substances M and N will occur in these. It is assumed that the speed of the chemical reactions at the phase division boundaries is much higher than the speed of the diffusion flows and, therefore, the kinetics are

determined solely by the diffusion process. It is furthermore assumed that the substance M diffuses only in one direction, while the substance N diffuses only in the opposite direction and also that the speed of diffusion of the substance M is larger in all phases than the speed of diffusion of the substance N. At the first moment each of the initial substances occupies a semi-space and has a plane division boundary with the other initial substance. The division boundaries between each two adjacent layers, obtained during reaction diffusion, are assumed as being planar and, therefore, the diffusion during the entire process will proceed only in the direction perpendicular to these planes. The origin of the coordinate system for calculating the diffusion process of the substance M is located in the point which lies at the division boundary between zero and the first layers and for the substance N in the point located at the division boundary between s and s+1 layers. The coordinates that coincide with the directions of the diffusion of the substances M and N are designated respectively by x and x^*. The directions x and x^* are opposite to each other but they are in the same straight line. It is assumed that, during the entire progress of the reactions, a constant ratio

of both initial components will become established at the boundaries of each layer, which is determined by the stoichiometric composition of the layer under consideration and by the limits of solubility in it of the diffusing substances. On the basis of these assumptions the distribution is determined of the concentration with depth of each layer, the speed of increase of the depth of the layer and the distance of the boundary from the origin of the coordinate system. It was found that the increase in weight of each layer and the increase in the total weight of all chemical reaction products obeys a parabolic law. There are 1 table and 2 Soviet references.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

VINOGRADOV, B.V.; RODIGIN, P.P.

Centering inserts for height gauges. Mashinostroitel' no.6: 18 Je '61. (MIRA 14:6)

(Gauges)

AUTHORS: Vinogradov, B. V., and Rodigin, P. P.

TITLE: Centering inserts for height gage

PERIODICAL: Mashinostroitel', no. 6, 1961, 18

TEXT: At several plants in Kuybyshev interchangeable angles and inserts are used successfully in place of a standard scriber in the height gage for finding the center line of a component set on a surface plate. These fixtures are used in the following way: The shaft of the angle is inserted in the seat for the scriber. When the correct height is found by touching the cylindrical part at two points, one above and one below the center line (see illustration), the angle is replaced by the scriber and the center lines can be drawn on both faces of the component being laid out. If the component has a hole a centering insert is used for the setting adjusting, and drawing of the axial and center lines. In this case centering is not effected by the outer surface but by the edges of the hole. The centering angles and inserts can be used to determine the geometrical axes of blanks of any configuration, to adjust the blanks parallel to the plate, check the wobbling of shafts, determine machining tolerances, expose residual

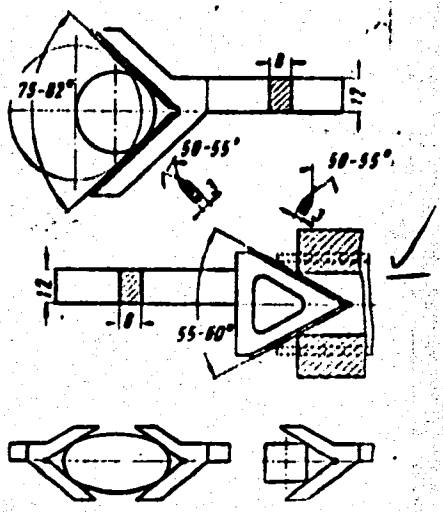
Card 1/2

S/117/61/000/006/004/012
A004/A104

Centering inserts for height gage

buckling, find the centers of shafts and apertures as well as the center lines of components having a symmetric shape. There is 1 figure.

[Abstractor's note: Essentially complete translation]



Card 2/2

RODIGIN, S.P.; ANTROPOV, L.V.

Distributing and regulating D_u-25mm. block. Lit. proizv. no.6: 16-18 Je '64. (MIRA 18:5)

RODIGIN, V.N. (Moskva)

Propagation of nonunidimensional detonation waves. PMTF no.4:135-136 Jl-Ag '61. (MIRA 14:10)
(Shock waves) (Detonation)

33596

S/207/61/000/004/007/012
E032/E514

11.8200 2406

AUTHOR: Rodigin, V.N. (Moscow)

TITLE: On the propagation of three-dimensional detonation waves

PERIODICAL: Akademii nauk SSSR. Siberskoye otdeleniye. Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki. no.4, 1961, 135-136

TEXT: It is assumed that the detonation wave front is slightly curved in such a way that the thickness of the front can be neglected in comparison with its radius of curvature. Moreover, it is assumed that the detonation wave is propagated along the normal to the wave front with a constant velocity D. Let $f(x,y,z,t) = 0$ represent the surface of the wave front. The condition D = const is satisfied provided

$$D^2\left[\left(\frac{\partial f}{\partial x}\right)^2 + \left(\frac{\partial f}{\partial y}\right)^2 + \left(\frac{\partial f}{\partial z}\right)^2\right] - \left(\frac{\partial f}{\partial t}\right)^2 = 0 \qquad (1)$$

In parametric form the general solution of Eq.(1) is

Card 1/4

On the propagation of ...

$$x = \frac{\partial f/\partial x}{\sqrt{(\partial f/\partial x)^2 + (\partial f/\partial y)^2 + (\partial f/\partial z)^2}} \Bigg|_{t=0}^{Dt+x_o}$$

$$y = \frac{\partial f/\partial y}{\sqrt{(\partial f/\partial x)^2 + (\partial f/\partial y)^2 + (\partial f/\partial z)^2}} \Bigg|_{t=0}^{Dt+y_o} \qquad (2)$$

$$z = \frac{\partial f/\partial z}{\sqrt{(\partial f/\partial x)^2 + (\partial f/\partial y)^2 + (\partial f/\partial z)^2}} \Bigg|_{t=0}^{Dt+z_o}$$

where x_o, y_o and z_o lie on the surface f at t = 0. This solution is applied to the case of the detonation of an explosive material having a smooth form without angular points, which is simultaneously ignited over its entire surface. The detonation wave front immediately after the ignition will move in accordance with Eq.(2). It is pointed out that the motion of the boundary between the detonation products and the vacuum will also be described by this equation, provided D is interpreted as the limiting velocity of ejection of the detonation products. The normal to the wave front

and to the boundary between the detonation products and the vacuum moves along the same straight line, and hence immediately after the ignition one can neglect tangential components which appear as a result of the difference in the radii of curvature of neighbouring sections of the detonation wave. Thus, immediately after the ignition, one can use the following set of isentropic equations

$$\left.\frac{d\alpha}{dt}\right|_{\alpha} = -ac\left(\frac{1}{R_1 + n} + \frac{1}{R_2 + n}\right) \quad \left(\alpha = \frac{dn}{dt} = u + c\right)$$

$$\left.\frac{d\beta}{dt}\right|_{\beta} = ac\left(\frac{1}{R_1 + n} + \frac{1}{R_2 + n}\right) \quad \left(\beta = \frac{dn}{dt} = u - c\right) \qquad (5)$$

where n is the length along the normal to the ignition surface measured from that surface, R_1 and R_2 are the principal radii of curvature of the ignition surface and u is the mass velocity of the material. The latter equations go over into the one-dimensional case when $R_1 \to R_2$ or $R_2 \to R_1 \to \infty$. If necessary the solution of Eqs.(5) along the directions specified by Eq.(2) can always be carried out numerically whenever the tangential

Card 3/4

On the propagation of ...

33596
S/207/61/000/004/007/012
E032/E514

components can be neglected. Acknowledgments are expressed to Ya. B. Zel'dovich for his advice. There is 1 Soviet-bloc reference.

[Abstractor's note: This is a condensed translation.]

SUBMITTED: May 5, 1961

Card 4/4

RODIGIN, V. N.

USSR/Physics - Crystallization Aug 52

"Theory of Crystallization," V. N. Rodigin, Ural State U

"Zhur Tekh Fiz" Vol 22, No 8, pp 1356-1361

Author gives a statistical soln of the course of the crystn process for finite values of the parameters defining it, a certain improvement over the treatment of the same problem by Acad A. N. Kolmogorov ("Iz Ak Nauk SSSR, Ser Matemat" No 3, 1937). Indebted to N. M. Rodigin. Received 4 Mar 51.

226T100

RODIGIN, Ye. M.

Doc Tech Sci - (diss) "Theory and practice application of electromagnetic and other related physical processes in metals and alloys." Sverdlovsk, 1961. 21 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Ural Polytechnic Inst imeni S. M. Kirov); 150 copies; price not given; list of author's works on pp 18-20 (58 entries); (KL, 7-61 sup, 230)

RODIGINA, A.M., professor; KATORGINA, O.A., assistent

Report on the work of the Lvov Ophthalmological Society for 1956. Oft.zhur. 12 no.5:316-317 '57. (MIRA 13:6)

1. Predsedatel' L'vovskogo nauchnogo obshchestva glaznykh vrachey (fro Rodigina). 2. Sekretar' L'vovskogo nauchnogo obshchestva glaznykh vrach (for Katorgina).
(LVOV--OPHTHALMOLOGICAL SOCIETIES)

RODIGINA, A.M., prof.

"Ophthalmic surgery" by A.F.Rumiantseva. Reviewed by A.M.Rodigina.
Oft.zhur. 13 no.1:60-61 '58. (MIRA 11:4)
(EYE--SURGERY) (RUMIANTSEVA, A.F.)

RODIGINA, A.M., prof.; KATORGINA, O.A., assistent.

Report on the work of the Lwov Ophthalmologic Society for 1957. Oft. zhur. 13 no.6:380-382 '58. (MIRA 12:1)

1. Predsedatel' pravleniya L'vovskogo oftal'mologicheskogo obshchestva glazmykh vrachey (for Rodigina). 2. Sekretar' pravleniya L'vovskogo oftal'mologicheskogoobshchestva glaznykh vrachey (for Katorgina).
(LVOV--OPHTHALMOLOGIC SOCIETIES)

RODIGINA, A.M., prof.

"Developmental abnormalities of the eye" by J.Abramowicz. Reviewed by A.M.Rodigina. Vest.oft. 71 no.1:60 Ja-F '58. (MIRA 11:3)
(EYE--DISEASES AND DEFECTS) (RODIGINA, A.M.)

RODIGINA, A.M., prof.; KATORGINA, O.A., assistent

Report of the Lvov Ophthalmological Society for 1958. Oft. zhur. 14 no.4:252-253 '59. (MIRA 12:10)

1. Predsedatel' pravleniya L'vovskogo oftal'mologicheskogo obshchestva glaznykh vrachey za 1958 god (for Rodigina).
2. Sekretar' L'vovskogo oftal'mologicheskogo obshchestva glaznykh vrachey za 1958 god (for Katorgina).
(LVOV--OPHTHALMOLOGICAL SOCIETIES)

RODIGINA, A.M., professor

Ophthalmology in the western provinces of the Ukraine. Oft.zhur. 15 no.1:55-59 '60. (MIRA 13:5)

1. Iz kafedry glaznykh bolezney (zav. - prof. A.M. Rodigina) L'vovskogo meditsinskogo instituta.
(UKRAINE--OPHTHALMOLOGY)

RODIGINA, A.M., prof.; SEMENOVA, G.S., starshiy laborant

Morphological investigations of eyes enucleated because of secondary glaucoma. Oft.zhur. 15 no.4:199-204 '60. (MIRA 13:11)

1. Iz kafedry glaznykh bolezney (zav. - prof. A.M.Rodigina) L'vovskogo meditsinskogo instituta.
(GLAUCOMA)
(EYE)

RODIGINA, A.M.; YEGOROV, I.F.; SEMENOVA, G.S.; KOSTYUK, A.N.

Congenital toxoplasmosis of the eye; a clinical and pathomorphological study. Vest.oft.74 no.1:45-52 '61. (MIRA 14:3)
(TOXOPLASMOSIS) (EYE--DISEASES AND DEFECTS)

ACC NR: AR7008641 SOURCE CODE: UR/0372/66/000/012/V027/V027

AUTHOR: Rodimov, A. P.

TITLE: On some statistical characteristics of polarization-modulated signals and partially polarized interference

SOURCE: Ref. zh. Kibernetika, Abs. 12V162

REF SOURCE: Sb. 2-ya Vses. konferentsiya po teorii kodir. i yeye prilozh. Sekts. 4. Ch. 2. M., b. g. 58-62

TOPIC TAGS: polarized signal, signal modulation, distribution function, data transmission

ABSTRACT: The state of an electromagnetic wave at an arbitrary point in space may be defined by four parameters: amplitude, phase, frequency spectrum and state of polarization. Any of these parameters may be used for transmission of information. The author studies the possibility of polarization modulation. Complex expressions are derived for the distribution function of the polarization parameters. It is shown that when the criterion of the "ideal observer" is used for the case of binary communications, a system utilizing modulation of polarization parameters is completely analogous in effectiveness to systems utilizing amplitude, phase or frequency modulation. V. Yakovlev. [Translation of abstract]

SUB CODE: 17,09 /

Card 1/1 UDC; 519.2;621.396

S/139/59/000/05/002/026
E032/E114

AUTHORS: Rodimov, B.N., Chernyatsev, P.A., and Medvedeva, T.A.

TITLE: On the Production of Large Currents in a Betatron /7

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 5, pp 6-13 (USSR)

ABSTRACT: From the theoretical point of view, the problem may be reduced to the solution of the following two problems: a) the choice of the best focussing field which, in the ideal case, could support the necessary number of electrons; b) the choice of a mechanism for capturing the electrons into the acceleration process which would be such that the current obtained in the chosen field would be sufficiently close to that required. In a previous paper (Ref 2) it was shown that the equilibrium charge which can be supported by the focussing magnetic field is given by Eq (1), where S is the cross-section of the region of maximum equilibrium charge (Fig 1), E_i is the injection energy in ergs, R_o is the radius of the equilibrium circle in cm, Q is the total charge in ESU, e is the electronic charge in ESU, and E_o is the rest mass of an electron. Having chosen the injection energy, R_o and S are chosen according to

Card 1/3

S/139/59/000/05/002/026
E032/E114

On the Production of Large Currents in a Betatron

the required value of Q. The choice of R_o and S then reduces to the choice of the required field configuration. If R_o and n_o are chosen so as to satisfy the requirements given in Ref 1, the potential function V_{MO} is given by Eqs (2) and (3). With this value of V_{MO} the Z component of the magnetic field in the plane $Z = 0$ is given by Eq (4) and the field exponent n by Eq (5). V_{MO} is the non-relativistic potential function. The relative potential function V_p can be obtained from V_{MO} with the aid of Eq (6) and the relation between H_z and V_p is then given by Eq (7). Having determined the equipotential lines, the quantities S and Q are then determined from Eq (1). If Q differs too much from the required value the calculation is repeated with different R_o and n_o. The profile of the poles giving the field defined by Eq (3) is described by Eq (8) which is obtained from the relation given by Eq (9), where r_o and z_o are the coordinates of the point through which the pole line is to be drawn. The capture mechanism

Card 2/3

RODIONA, I.N

Karpachev, S. and Rodiona, I., Investigation of electrocapillary phenomena for alloys of tin with gold and bismuth with tellurium. P. 953

The electrocapillary phenomena of liquid alloys of tin with gold and bismuth with tellurium were investigated. In both cases definite surface tension minima were observed. The conditions for the existence of surface tension maxima and minima were also investigated. The extremes are due to the deviation of the alloy from the laws of ideal solutions.

Lab. of Electrochemistry, Ural Branch of Acad. of Sci., USSR
Sverdlovsk
Sept. 27, 1948

SO: Journal of Physical Chemistry, (USSR) 23, No. 8 (1949)

RODIGINA, E.

USSR/Chemistry - Electrocapillarity
Tin Alloys

Aug 49

"Research on the Electrocapillary Phenomena of Alloys of Tin With Gold and Bismuth With Tellurium," S. Karpachev, E. Rodigina, Lab of Electrochem, Inst of Chem and Metal, Sverdlovsk, Ural Affiliate, Acad Sci USSR, 5½ pp

"Zhur Fiz Khim" Vol XXIII, No 8.

Research on both these types of alloys in the fluid state indicates a pronounced minimum of surface tension. Aided by the theory of A. Zhukhovitskiy, examined maximum and minimum surface tensions of binary metallic alloys with relation to common boundaries of the two components of the alloys and their saturated vapors. Positive and negative deviations in the behavior of alloys in contrast with ideal solutions predict maximum and minimum estremes, respectively. In the equation for the surface tensions of pure components, the extreme always lies at the molar fraction 0.5. Submitted 27 Sep 48.

PA 67/49T12

RODIGINA, E.N.

b

1-4E2c4

Tube furnace for temperatures up to 1600°C. K. Z. Gömbösi, P. N. D'yachkov, E. N. Rodigina, and D. A. Startsev. *Zavodskaya Lab.*, 21 [4] 494 (1955); abstracted in *J. Iron Steel Inst.*, 184 [3] 367 (1956).—The construction of a double-winding electrical resistance furnace for temperatures up to about 1600°C. is described. The high temperature coefficient of the main winding gives satisfactory constancy of temperature. V.R.E.

RODIGINA, E.N.; GOMEL'SKIY, K.Z.

Heat content of the α-modification of aluminium oxide (corundum) at high temperatures. Zhur.fiz.khim. 29 no.6:1105-1112 Je '55. (MLRA 9:1)

1.Filial Vsesoyuznogo instituta metrologii imeni D.I.Mendeleyeva, Sverdlovsk.
(Calorimetry) (Corundum)

RODIGINA, E.N.; STEPANOV, G.K.

Corrosion of silver in molten alkali metal carbonates. Trudy Inst. elektrokhim. UFAN SSSR no.3:77-82 '62. (MIRA 16:6)

(Silver—Corrosion)
(Alkali metal carbonates)

PODIOINA E.N.

[redacted]; GOMEL'SKIY, K.Z.

Heat content of beryllium and lithium oxides at high temperatures. Zhur.fiz.khim. 35 no.8:1828-1831 Ag '61. (MIRA 14:8)

1. Sverdlovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta metrologii imeni D.I. Mendeleyeva.
(Beryllium oxide--Thermal properties)
(Lithium oxide--Thermal properties)

RODIGINA, E.N.; GOMEL'SKIY, K.Z.; LUGININA, V.F.

Method for taking into account heat losses in a specimen during lowering into the calorimeter in calorimetric tests according to the mixing method. Trudy VNIIM no.35:153-160 (95), 1958. (MIRA 14:9)

(Calorimetry)

RODIGINA, E.N.; GOMEL'SKIY, K.Z.; LUGININA, V.F.

Heat content and heat capacity of (yellow) lead oxide at elevated temperatures. Zhur.fiz.khim. 35 no.8:1799-1802 Ag '61. (MIRA 14:8)

1. Sverdlovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta metrologii imeni D.I. Mendeleyeva.
(Lead oxide--Thermal properties)

26549

S/076/61/035/008/013/016
B110/B101

15-2630

AUTHORS: Rodigina, E. N., and Gomel'skiy, K. Z. (Sverdlovsk)

TITLE: Heat content of beryllium and lithium oxides at high temperatures

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 8, 1961, 1828 - 1831

TEXT: In view of the fact that the thermodynamic characteristics of oxides relative to metals of the 1st and 2nd group of the periodic system at high temperatures are still little known, the authors of the present paper wanted accurately to determine the heat contents of beryllium- and lithium oxide between 100 and 900°C. 99.9% pure conically pressed BeO samples were turned down after hardening, and again hardened at 1800°C. Since sublimation below 1000°C amounted to only 0.1mg the 5.6 g samples were placed into Pt ampuls that were not hermetically sealed. Li_2O was produced by thermal vacuum decomposition of LiOH (54.4% LiOH; 0.55% CO_2; 0.10% SO_4^{2-}; 0.10% SiO_2; 0.05% Ca; 0.01% Cl; Al; Mg, and PO_4^{3-}; Na- and Fe traces). The selected working mode aimed at removing H_2O and decomposing

Card 1/6

26549
S/076/61/035/008/013/016
B110/B101

Heat content of...

LiOH and Li_2CO_3. The Pt ampul with 20% Rh content was provided with a capillary for filling and evacuation. A pressure of 0.1 - 0.2 mm Hg prevailed in the vacuum furnace with Pt heating element. The ampul with LiOH was heated up to room temperature in the vacuum during 4 hr, then to 400°C during 2 hr. The latter temperature was kept for 4 hr to remove most of the water. For decomposing LiOH, Li_2CO_3, etc, the temperature was slowly raised to 950°C. The furnace was disconnected after 36 hr. After having been allowed to cool, it was fed by pure argon, and the ampul capillary was evacuated for 15 min; the capillary was then hermetically melted in the electric arc. The oxide film of the PtRh ampul forming at ~ 700°C must be taken account of when drawing the curves of the temperature dependence of the effective heat losses. The weight was determined by weighing the empty crucible. The < 2% impurities found in the measurement (probably LiOH) do not require any corrections beyond the normal range of measurement errors. The measurements were performed using the mixing method and a device featuring an aluminum block calorimeter described by the authors (Ref. 3: Zh. fiz. khimii, 29, 1105, 1955) and K. Z. Gomel'skiy (Ref. 6: Zh. fiz. khimii, 32, 1895, 1958)(water equivalent = 1,600 J/deg; sensitivity ~ 0.5 J; cooling constant ~ $5 \cdot 10^{-3}$ min^{-1} with thermostat

Card 2/6

Heat content of...

casing and thermostat for high temperatures). Amperage and duration of operation were chosen such that the graduation curve was near the experimental curve. This was necessary in order to keep out systematic errors due to the approximation calculus according to Regnault-Pfaundler, as well as nonuniformity of the temperature field, etc. The mean square error was 0.02% for a temperature rise between 0.5 and 3°C. The total instrumental error of the measurements was $\leqslant$ 0.3%, with $\sim$ 0.1% falling to the systematic errors of temperature measurement. The heat losses in the calorimeter were taken into account in accordance with the authors (Ref. 8: Sb. VNIIM, 35/95, 153, 1958). K. Magnus and H. Danz (Ref. 9: Ann. Phys., 4, 407, 1929) established a break on the mean heat content - temperature curve for powdery BeO at $\sim$ 673.15°K, which confirms findings to a certain extent. The measurement results between 360 - 1150°K are not easily expressed by simple equations of the type: $H = aT + bT^2 + cT^{-1} + d$ (1). Deviations amount here to 0.5%. Measurement results are expressed with deviations of $\leqslant$ 0.5% by: $H_T - H_{298.15} = 36.36\ T + 7.56 \cdot 10^{-3} \cdot T^2 + (1.36 \cdot 10^6)/T - 16100$ J/mole (363 - 1130°K) (2). The interpolation equation $H_T - H_{298.15} = 63.44\ T + 0.01171 \cdot T^2 + (14.09 \cdot 10^5)/T - 24168$

Card 3/6

Heat content of...

J/mole (373 - 1125°K) (3) fits results of Table 2 with a deviation of 0.1%. As the volume heat content of Li_2O is small, small errors of the heat loss are of importance. The heat contents calculated by (3) contain no errors of 0.35%. Data obtained by C. H. Schomate et al. (Ref. 5: J. Amer. Chem. Soc., 77, 285, 1955) by the decomposition of Li_2O_2 differ from the authors' results by 0.4% only. The Li_2O production method was worked out together with L. M. Kutsyna and V. V. Kandyba. V. F. Luginina is thanked for her assistance in the measurements. There are 2 tables and 14 references: 5 Soviet-bloc and 9 non-Soviet-bloc. The three most important references to English-language publications read as follows: Ref. 12: K. K. Kelley, Contributions to the data on theoretical Metallurgy X, 1949. Ref. 13: K. K. Kelley, J. Amer. Chem. Soc., 61, 1217, 1939. Ref. 14: H. E. Jonston T. W. Bauer, J. Amer. Chem. Soc., 73, 1119, 1951.

ASSOCIATION: Sverdlovskiy filial Vsesoyuznogo n.-i. in-ta metrologii im. D. I. Mendeleyeva (Sverdlovsk Branch of the All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev)

RODIGINA, E. N

PHASE I BOOK EXPLOITATION SOV/5280

Rodigin, Nikolay Mikhaylovich, and Emiliya Nikolayevna Rodigina

Posledovatel'nyye khimicheskiye reaktsii; matematicheskiy analiz i raschet (Successive Chemical Reactions; Mathematical Analysis and Calculation) Moscow, Izd-vo AN SSSR, 1960. 137 p. Errata slip inserted. 6,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut fiziki metallov.
Resp. Ed.: G. V. Fedorov; Ed. of Publishing House: A.L. Bankvitser;
Tech. Ed.: A. A. Lebedeva.

PURPOSE: This book is intended for physical chemists and other persons concerned with reaction kinetics and control.

COVERAGE: The book provides a generalized treatment of materials indicating a definite trend towards the use of the operator method in solving differential equations making it possible to predict the results of successive chemical reactions. New material on mathematical analyses and calculations of complex successive reactions, and on other works carried out by N. M. Rodigin at the

Card 1/5

Institute of Physics of Metals of the Academy of Sciences USSR, are included. The authors review monomolecular successive, irreversible, reversible, reversible-successive, parallel successive, and parallel-successive cross-linked reactions and chain reactions. In most cases the reactions are considered as having an unlimited number of stages and various amounts and different orders of arrangement of initial substances. The book also gives a method for calculating the composition of products on the basis of reaction rate constants, and a method of determining the reaction rate constant on the basis of the composition of reaction products. Practical examples are included. Fundamentals of the operator method of solving differential equations and a table of transformed functions and their corresponding solutions resulting from Laplace-Carson transformation $(F(P) = P\int e^{-Pt}f(t)dt)$ are given in Supplement II. The authors thank V. G. Plyusnin, Doctor of Chemical Sciences, and Ye. P. Babin, Candidate of Chemical Sciences. There are 30 references: 18 Soviet, 3 English, 4 French, and 5 German.

TABLE OF CONTENTS:

RODIGIN, Nikolay Mikhaylovich; RODIGINA, Emiliya Nikolayevna; FEDOROV, G.V., otv.red.; BANKVITSER, A.L., red.izd-va; LEBEDEVA, A.A., tekhn.red.

[Chemical step reactions; mathematical analysis and computations] Posledovatel'nye khimicheskie reaktsii; matematicheskii analiz i raschet. Moskva, Izd-vo Akad.nauk SSSR, 1960. 137 p. (MIRA 14:2)

(Chemical reaction, Rate of)

SOV/58-59-10-22385

Translation from: Referativnyy Zhurnal, Fizika, 1959, Nr 10, p 87 (USSR)

AUTHORS: Rodigina, E.N., Gomel'skiy, K.Z., Luginina, V.F.

TITLE: A Means of Allowing for Heat Losses of a Sample That is Dropped in the Calorimetric Mixing Method

PERIODICAL: Tr. Vses. n.-i.in-ta metrol., 1958, Nr 35(95), pp 153 - 160

ABSTRACT: This study determines the so-called residual error due to the unavoidable difference in heat losses (L) of an empty and a filled ampoule (A) in the calorimetric mixing method. Measurements were carried out on a device that included two massive calorimeters and two thermostats (up to 900° and 1,500°C but the latter is only slightly described). At temperatures $<$ 500°C calorimetric sensitivity of the order of 0.05 cal was ensured. The effective (with allowance for L) heat contents H_{ef} of the ampoules (made of Pt and Pt-Rh, weighing 5 to 8 g, and having surface areas of $\sim$20 cm^2) were experimentally determined for a time of drop outside of the device of $\sim$0.18 sec. From this, the L and the reduction in surface temperature Δt when the sample is dropped were determined for the empty ampoules in accordance

Card 1/2

-5(4 SOV/78-4-5-5/46

AUTHORS: Rodigina, E. N., Gomel'skiy, K. Z., Luginina, V. F.

TITLE: The Heat Content and the Heat Capacity of Lithium Chloride at Higher Temperatures (Teplosoderzhaniye i teployemkost' khloristogo litiya pri vysokikh temperaturakh)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 5, pp 975-978 (USSR)

ABSTRACT: The heat content and the heat capacity of lithium chloride was investigated in a metallic calorimeter with isothermal casing and furnace. The temperature of the calorimeter casing is kept on a constant level with an accuracy of $\pm$ 0.001°. The results obtained by means of this arrangement of apparatus are easily reproducible up to an error of 0.02%. The lithium chloride preparation was purified by re-crystallization carried out three times and contains 0.002% impurities. The heat capacity of the solid and liquid phase of lithium chloride was calculated by equations (3) and (4) and shown by table 1.

$$C_p = 10.20 + 5.21.10^{-3}T \text{ —— } 0.223.10^{5}T^{-2} \quad (3)$$

$$C_p = 16.25 \text{ —— } 1.29.10^{-3}T \; . \quad (4)$$

The melting temperature of the lithium chloride was determined according to the course of the curve H(T) and amounts to 610 $\pm$ 1°C. For comparison, table 2 shows the melting tempera-

Card 1/2

The Heat Content and the Heat Capacity of Lithium Chloride at Higher Temperatures

tures of lithium chloride as determined by various authors. Equations were suggested for the purpose of calculating the heat content and the heat capacity of the liquid and solid phases. The melting heat and melting entropy were determined for the solid and liquid phase. The following values were found: 4.67 ± 0.05 kcal/mol and 5.29 ± 0.05 cal/mol.degree. The melting temperature of lithium chloride is 610 ± 1°. There are 2 tables and 16 references, 6 of which are Soviet.

ASSOCIATION: Sverdlovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo in-ta metrologii im. D. I. Mendeleyeva
(Sverdlovsk Branch of the All-Union Scientific Research Institute for Metrology imeni D. I. Mendeleyev)

SUBMITTED: September 9, 1958

RODIK, A.B.

Extrauterine pregnancy according to [illegible] the Anan'yev District Hospital in Odessa Province. Akush. i gin. 40 no.1: 140-141 Ja-F '64. (MIRA 17:8)

1. Anan'yevskaya rayonnaya bol'nitsa (glavnyy vrach G.B. Andriyevskiy).

RODIKOV, A.P., mladshiy nauchnyy sotrudnik

Electroencephalographic data on patients suffering from the residual manifestations of viral encephalitis during a treatment period at Pyatigorsk health resort. Uch.zap.Pyat.gos.nauch.-issl. bal'n.inst. 3:79-83 '60. (MIRA 15:10)

(ELECTROENCEPHALOGRAPHY) (ENCEPHALITIS)
(PYATIGORSK--HEALTH RESORTS, WATERING-PLACES, ETC.)

RODIKOV, Ye.

RODIKOV, Ye. (Minsk)

For the Soviet Motherland. Prom.koop. no.11:14-15 N '57. (MIRA 10:12)

(Liventsev, Viktor Il'ich)

L 41031-65 EWG(a)-2/EWG(c)/EWG(j)/EWG(r)/EWG(v)/EWP(c)/EWP(k)/EWT(d)/EWT(l)/EWP(h)/FS(v)-3/T/EWA(d)/EWP(l)/EWP(w)/EWP(v) Pe-5/Pf-4 EM/DD/DT

ACCESSION NR: AP5008558 S/0286/65/000/006/0067/0067

40
B

AUTHORS: Vasil'yev, V. G.; Rodikova, L. M.; Shamova, L. M.

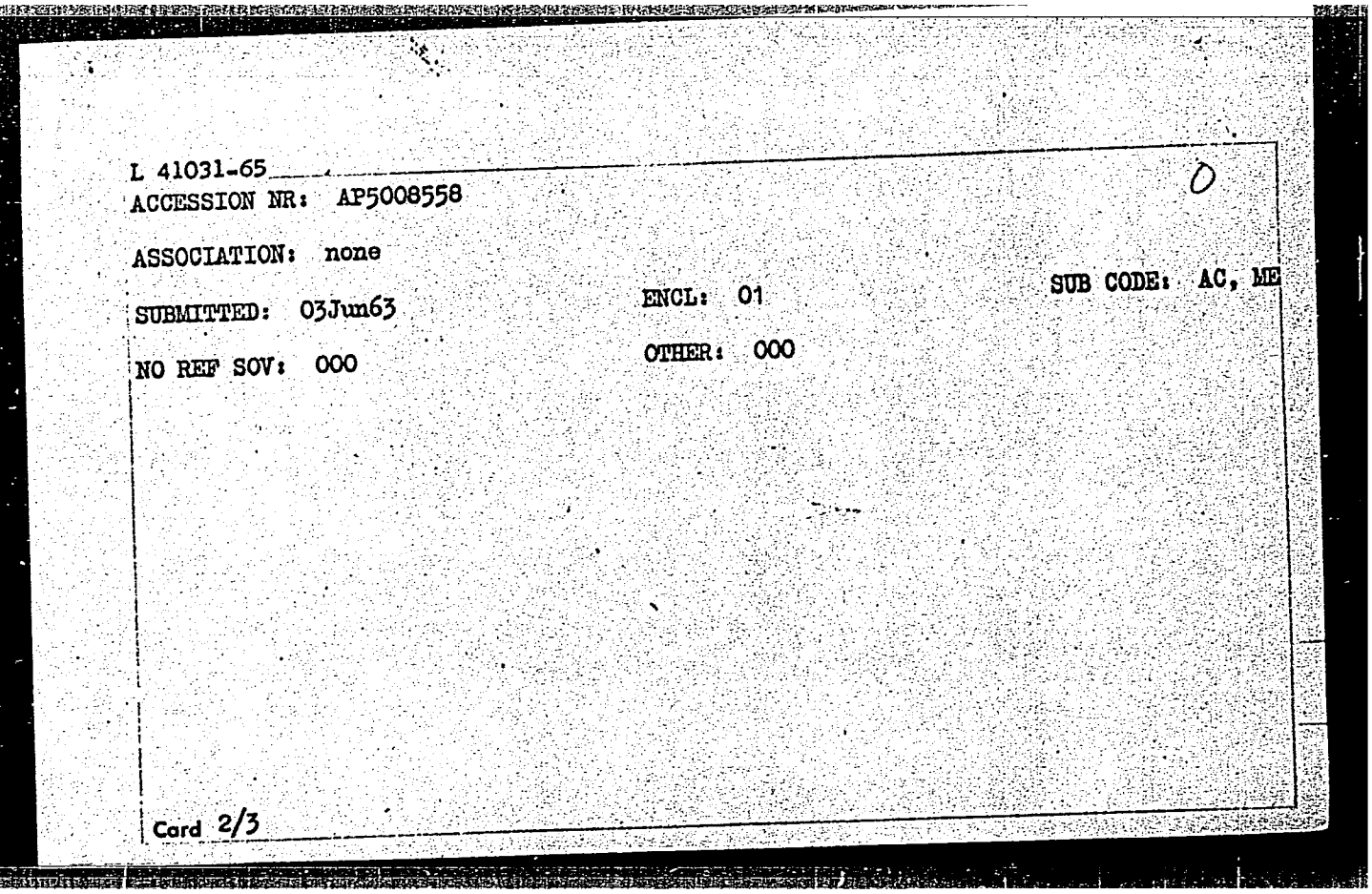
TITLE: An automatic device for the programmed control by a mechanism of the deflection angle of a model in a wind tunnel. Class 42, No. 169270

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 6, 1965, 67

TOPIC TAGS: deflection angle control, wind tunnel model test

ABSTRACT: This Author Certificate presents an automatic device for the programmed control by a mechanism of the deflection angle of a model in a wind tunnel (see Fig. 1 on the Enclosure). The device contains a mechanical measuring unit of the model deflection angle, designed to increase the reliability and precision of the program processing. The measuring unit in the device is made in the form of a relay circuit controlled by the contact device of the step selector. The rotor of this step selector is connected by a transmitting selsyn to the basic axis of the model deflection angle mechanism. The measuring unit uses the contour of automatic regulation, consisting of the model of the controlling block with continuous drive motion. This drive ensures the placing of the model in the zero position of the model deflection angle. Orig. art. has: 1 figure.

Card 1/3



L 41031-65

ACCESSION NR: AP5008558

0

ASSOCIATION: none

SUBMITTED: 03Jun63 ENCL: 01 SUB CODE: AC, ME

NO REF SOV: 000 OTHER: 000

Card 2/3

KOMAROV, V.A.; PLATONOVA, V.I.; RODIMENKOVA, N.A.; KHARITONOV, N.P.; KHUDOBIN, Yu.I.

Effect of alcohol structure and solvent composition on the kinetics of the alkaline solvolysis of trialkylsilanes. Zhur. fiz. khim. 38 no.9:2139-2144 S '64. (MIRA 17:12)

1. Institut khimii silikatov imeni Grebenshchikova AN SSSR, Leningrad.

RODIMKIN, Ye.D.; DONSKOY, P.V.

Outlook for the development of power engineering in Uzbekistan for 1970. Izv. AN Uz.SSR. Ser. tekh. nauk no. 3:87-88 '58. (MIRA 11:8)

(Uzbekistan--Power engineering)

RODIMKIN, Ye. D.

Indices of heating ventilation and private heat consumption in the 4th climatic zone. Izv. AN Uz. SSR. Ser. tekh. nauk no. 2:43-41 '57. (MIRA 11:7)

(Heat engineering)

KHAMUDKHANOV, M.Z., kand.tekhn.nauk, otv. red.; RODIMKIN, Ye.D., kand.tekhn. nauk, red.; URMANOV, F.N., kand. tekhn. nauk, red.; LEVKOVICH, B.A., red.; KISELEVA, V.N., red.; SOKOLOVA, A.A., red.; KARABAYEVA, Kh.U., tekhn. red.

[Power engineering, automation, mining, and light industry] Voprosy energetiki avtomatiki, gornogo dela i legkoi promyshlennosti. Tashkent, Izd-vo AN UzSSR, 1961. 243 p. (MIRA 15:8)

1. Akademiya nauk Uzbekskoy SSR, Tashkent, Otdeleniye tekhnicheskikh nauk. 2. Chlen-korrespondent Akademii nauk Uzbekskoy SSR (for Levkovich).
(Power engineering) (Automation) (Mining engineering)

RODIMKIN, Ye.D.; MONOKROVICH, E.I.; ORANSKIY, I.N., kand. tekhn. nauk, otv. red.; SOKOLOVA,A.A.,red.; GOR'KOVAYA,Z.P.,tekhn.red.

[Heating and cooking systems in cities of Central Asia] Teplosnabzhenie i khladofikatsiia gorodov Srednei Azii; tekhniko-ekonomicheskie voprosy. Tashkent, Izd-vo Akad. nauk UzSSR, 1962. 172 p. (MIRA 16:5)
(Soviet Central Asia--Heating)
(Soviet Central Asia--Air conditioning)

RODIMKIN, Ye.D.

Specific heat consumption standards for heating and ventilation in the fourth climatic zone. Izv. AN Uz. SSR, Ser. tekh. nauk no4: 26-36 '59. (MIRA 13:1)

1. Institut energetiki i avtomatiki AN UzSSR.
(Dwellings--Heating and ventilation)

RYAZANOVSKIY, Serafim Konstantinovich; POGODIN-ALEKSEYEV, G.I., prof., obshchiy red.; RODIMOV, A.V., red.

[Reading drawings; a textbook] Chtenie chertezhei; uchebnoe posobie. Moskva, Izd-vo VPSh i AON pri TsK KPSS, 1959. 60 p.

1. Rukovoditel' kafedry osnov promyshlennogo proizvodstva i stroitel'stva Vysshey partiynoy shkoly pri TSentral'nom komitete Kommunisticheskoy partii Sovetskogo Soyuza (for Pogodin-Alekseyev).
(Mechanical drawing)

L 46051-66 EEC(k)-2/EWT(d)/FSS-2 RB/WS-2/GD

ACC NR: AT6022343 SOURCE CODE: UR/0000/66/000/000/0040/0043

77
B+1

AUTHOR: Rodimov, A. P.

ORG: None

TITLE: Possibilities for discrete analysis of partially polarized signals

SOURCE: Vsesoyuznaya nauchnaya sessiya, posvyashchennaya Dnyu radio. 22d, 1966. Sektsiya teorii i tekhniki peredachi diskretnykh signalov. Doklady. Moscow, 1966, 40-43

TOPIC TAGS: polarized signal, signal analysis, signal interference, communication channel, radio wave propagation

ABSTRACT: The author considers analysis of the polarization structure of signals which are partially polarized by interferences during propagation along actual communication channels. It is assumed that a quasimonochromatic partially polarized wave which is the superposition of a determinate signal and a partially polarized interference is given at the reception point. It is shown that the degree of polarization of the wave may be calculated by discrete methods. A proof is given for the theorum that the average number of common (simultaneous) zeros for the instantaneous values of the two oppositely polarized components of the stationary partially polarized wave is equal to the mode of the probability density for the phase difference

Card 1/2

L 46054-66

ACC NR: AT6022343

between these components. It is further shown that when there is no determinate wave the average number of zeros for these components determines their coherence which is actually the degree of polarization in this case. Orig. art. has: 17 formulas.

SUB CODE: 09/7/SUBM DATE: 09Apr66/ ORIG REF: 001

Card 2/2 gd

Rodimov B. A.

RODIMOV, B.A., inzhener.

Centralized dispatching on American railroads. Avtom.elem. i sviaz' no.7:43 Jl '57. (MLRA 10:8)
(United States--Train dispatching)

RODIMOV, B.A., inzh. (Leningrad); PAVLOV, V.Ye., inzh. (Leningrad)

Technical and operational requirements of ARS retarder.
Zhel.dor.transp. 47 no.12:59-62 D '65.
(MIRA 18:12)

RYAZANTSEV, Boris Sergeyevich, kand.tekhn.nauk; RODIMOV, Boris Alekseyevich, inzh.; GORODNICHEV, N.G., inzh., red.; KHITROV, P.A., tekhn.red.

[Operation of signal systems] Ekspluatatsionnye osnovy ustroistv STsB. Moskva, Gos.transp.zhel-dor.izd-vo, 1959. 406 p. (MIRA 12:4)
(Railroads--Signaling)

RODINOV, B.I., dots., red.

[Transactions of the Fourth Scientific Conference on Electron Accelerators] Trudy Mezhvuzovskoi nauchnoi konferentsii po elektronnym uskoriteliam. Moskva, Vysshaia shkola, 1964. 557 p. (MIRA 17:9)

1. Mezhvuzovskaya nauchnaya konferentsiya po elektronnym uskoritelyam. 4th, Tomsk, 1961.

L 25070-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pab-10/Pt-10 IJP(c)

ACCESSION NR: AR4045743 S/0275/64/000/007/A051/A051

SOURCE: Ref. zh. Elektronika i yeye primeneniye. Svodny*y tom, Abs. 7A296

AUTHOR: Rodimov, B. N. 33 B

TITLE: Stereotron with shuttle focusing

CITED SOURCE: Sb. Elektron. uskoriteli. M., Vy*ssh. shkola, 1964, 191-201

TOPIC TAGS: stereotron, betatron

TRANSLATION: A theory is presented of the stereotron, i. e., a betatron with special equilibrium orbit and with a focusing region traveling together with the beam; the focusing region is created without any longitudinal azimuth field. Calculation of a typical controlling field and a motion of an ideal equilibrium electron in this field is indicated. The problem of stability of electron motion in the stereotron, of constructing potential wells, and of creating the traveling focusing field are considered. Advantages of stereotron are listed, as well as the prospects for its applications.

SUB CODE: NP ENCL: 00

Card 1/1

68177
SOV/58-59-5-9916

21.2000

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, p 26 (USSR)

AUTHOR: Rodimov, B.N.

TITLE: On the Mechanism of Electron Capture Into Acceleration in a Betatron. I.

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1957, Vol 87, pp 11 - 29

ABSTRACT: The author attempts to elaborate a many-particle theory of electron capture under betatron conditions of acceleration. He treats the electron beam as a hydrodynamic jet to which a continuity equation applies. It follows from the resulting formulae that, thanks to interaction, the electrons, which would have to collide with the wall of the chamber if no allowanceswere made for interaction, do not get as far as the wall during the first revolution. In connection with the study of electron beam interaction, the true picture of the continuous introduction of electrons (injection) and the continuous modification of beam trajectories is replaced by a "stepped" picture; i.e., the position of beams is examined at those moments when a new beam, which has come into existence at the instant the preceding beam

Card 1/2